

1. A process for fabricating a solid, large area platform mounted in a cavity in a wafer for motion with respect to the wafer by integral flexible, supports, comprising:
 - producing on a top surface of the wafer a first pattern defining the size, shape and location of a large area platform, and actuators for the platform;
 - etching through said first pattern to produce in a top portion of the wafer top surface trenches surrounding mesas corresponding to said platform, said supports and said actuators;
 - producing on a bottom surface of the wafer a second pattern corresponding to the size, shape and location of said platform;
 - etching through said second pattern to produce in a bottom portion of the wafer a bottom trench corresponding to said platform, the bottom trench being aligned with but spaced below the top trench surrounding the mesa corresponding to said platform;
 - further etching the top trenches to cause the top surface trench surrounding the mesa corresponding to said platform to intersect said bottom trench to produce a through trench to free said platform; and
 - additionally etching said top trenches to undercut said mesas to release said supports and said actuators from the wafer underlying the supports and actuators, the ends of said supports being integral with and cantilevered from the wafer and the platform and extending therebetween to support the platform.
2. The process of claim 1, wherein producing said first pattern on the top surface of a wafer includes coating the top surface with an oxide layer, and photolithographically patterning said oxide layer.
3. The process of claim 2, wherein etching through said first pattern includes performing a silicon etch using a high etch rate high selectivity reactive ion etch.
4. The process of claim 3, wherein said etching includes alternate etch and passivation cycles.
5. The process of claim 1, wherein producing a second pattern on a bottom surface

of said wafer includes coating the bottom surface with a second oxide layer and photolithographically patterning said second oxide layer.

6. The process of claim 5, wherein patterning said second oxide layer includes aligning a bottom surface pattern with the pattern produced on said top surface.

5 7. The process of claim 5, wherein etching through said second pattern includes performing a second silicon etch which extends into said wafer and stopping said second silicon etch before it reaches said top surface trenches.

8. The process of claim 1, wherein further etching includes deepening said top surface trenches to intersect said bottom trench.

10 9. The process of claim 1, wherein additionally etching said top trenches includes an isotropic silicon release etch.

10. The process of claim 1, further including sputter coating said large area platform, said flexible supports and said actuators with a conductive material.

ADD
AA >